

SOV/137-58-8-16463

Operational Stresses in Blast-furnace Casings (cont.)

revealed maximal stresses (peripheral stresses amounting to  $5353 \text{ kg/cm}^2$  and vertical stresses of  $3390 \text{ kg/cm}^2$ ) in the casing of the furnace Nr 1 of the NLMZ (Novo-Lipetsk Metallurgical Plant), 25 to 30 days after its firing, at a point corresponding to the top of the well. Peripheral and vertical stresses of  $6024$  and  $2690 \text{ kg/cm}^2$ , respectively, were observed at the same point on the casing of the Nr-4 furnace at the "Azovstal'" plant four months after the firing of the furnace. In order to prevent excessive stresses and deformation of casing metal, it is advisable that the junction of the cylindrical casing of the well and the conical housing of the hearth be situated above the upper rim of the well. Clearances between the lining and the heat exchangers must be kept constant throughout the height and circumference of the hearth (150-200 mm; up to 300 mm in the vicinity of the junction). Plate-shaped heat exchangers should have no ribs, be 120-160 mm thick, and should be arranged in such manner as to ensure horizontal and vertical clearances of 40-50 and 25-30 mm respectively. Bibliography: 2 references.

1. Blast furnaces--Stresses
2. Blast furnaces--Design
3. Stress analysis

N.L.

Card 2/2

SOROKIN, Lev Aleksandrovich; YEZDOKOVA, M.L., red. izd-va;  
MIKHAYLOVA, V.V., tekhn. red.

[Behavior of structural members of a blast furnace] Rabota  
konstruktsii domennykh pechei. Moskva, Metallurgizdat,  
1962. 264 p. (MIRA 15:8)  
(Blast furnaces—Design and construction)

SOROKIN, L.A., kand. tekhn. nauk

Actual deformations of steel shells in blast furnace plants.  
Mat. po met. konstr. no.7:119-162 '62. (MIRA 17:1)

SOROKIN, L.A., inzh.; KHOKHRYAKOV, V.S., datsent

Selection of the type of open-pit transportation. Izv. vys. ucheb.  
zav.; gor. zhur. 6 no.4:10-18 '63. (MIRA 16:7)

1. Sverdlovskiy gornyy institut imeni Vakhrusheva. Rekomendovana  
kafedroy otkrytykh rabot.  
(Mine haulage)

KORMIL'TSEV, V.A., dotsent; SOROKIN, L.A., inzh.

Analytical method of determining the basic parameters of inclined skip hoists for strip mining. Izv. vys. ucheb. zav.; gor. zhur. 6 no.8:94-101 '63. (MIRA 16:10)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva.  
Rekomendovana kafedroy rudnichnogo transporta i gornykh mashin.

SOROKIN, L.A., gornyy inzh.; KHOKHRIAKOV, V.S., kand. tekhn. nauk

Economic evaluation of strip mine truck haulage taking into account  
the time factor. Gor. zhur. no.5:7-11 My '65. (MIRA 18:5)

KHOKHRYAKOV, V.S.; SOROKIN, L.A.; KORMIL'TSEV, V.A.; SIMAKOV, P.G.

Economic effectiveness of using skip hoists at the Sibay Mine.  
Gor. zhur. no.9:15-16 S '65. (MIRA 18:9)

1. Sverdlovskiy gornyy institut (for Khokhryakov, Sorokin,  
Kormil'tsev). 2. Bashkirskiy medno-sernyy kombinat (for Simakov).

SOROKIN, Leonid Dmitriyevich; NAUMCHEV, Boris Aleksandrovich;  
FOFANOVA, L.V., red.

[New methods of manufacturing dies and molds] Novye metody  
izgotovleniia shtampov i pressform. Saratov, Privolzhskoe  
knizhnoe izd-vo, 1964. 48 p. (MIRA 18:12)

SOROKIN, L.F.

Introducing a gas furnace for high-temperature hardening of bent sections of austenite-steel pipes. Bnl.tekh.-ekon.inform.Gos.nauch.-issl. inst. nauch.i tekhn.inform. 18 no.6:22-23 Je '65. (MIRA 18:7)

SOV/137-59-1-1709

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 226 (USSR)

AUTHORS: Raytses, V. B., Sorokin, L. I.

TITLE: An Investigation of the Causes of Wear and Failure of Drop-hammer Dies (Issledovaniye prichin iznosa i polomok molotovykh shtampov)

PERIODICAL: Sb. statey. Chelyab. politekhn. in-t, 1958, Nr 8, pp 76-84

ABSTRACT: Various forms of fractures and wear in dies (D) are described, and the causes and the mechanism of cracking, crumpling, etc. are analyzed. Data on the durability of D's under various operating conditions are presented. Laboratory investigations performed on five D's which either had failed while in operation or exhibited an unusually rapid wear are described. It was established that the strength of the D's is seriously impaired if their temperature is reduced below 800°C and that of the forgings, below 830°C; the following factors tend to improve the durability of the D's: Employment of lubricating coatings, descaling, strict adherence to temperature ranges prescribed, and uniform and adequate heating of the D's; an optimal hardness should be established for each type of D.

Card 1/1

M. Ts.

MAZEL', Aleksandr Grigor'yevich; ROGOVA, Yelena Mikhaylovna; SOROKIN,  
Lev Ivanovich; RAZUMOVSKAYA, T.Ya., red.; DEMIDOV, Ya.F.,  
tekhn.red.

[Research on new electrodes for the welding of pipes and other  
structures made of low-carbon and low-alloy steels] Issledo-  
vanie novykh elektrodov dlia svarki truboprovodov i drugikh  
konstruktsii iz malouglerodistoi i niskolegirovannoi stali.  
Moskva, VNIIST Glavgaza SSSR, redaktsionno-izdatel'skii otel,  
1960. 30 p. (MIRA 14:11)

(Steel--Welding)

84698

1.2300 2 208, 2708 only

S/135/60/000/005/005/009  
A115/A029

AUTHORS: Mazel', A.G., Candidate of Technical Sciences; Rogova, Ye.M.;  
Sorokin, L.I.; - Engineers

TITLE: Electrodes with Plastic, Gas-Shielded Coating for Welding of Low-  
Carbon and Low-Alloyed Steels

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 5, pp. 25 - 28

TEXT: New electrodes with gas-shielded coating have been developed in the welding laboratory of the VNIIST. As binding and gas-producing component organic resins were used to substitute water glass. Production of electrodes proceeds in the following way: A dry layer of coating is soaked with diluted resin, stirred and applied under high pressure to a normal electrode wire. Drying and tempering is replaced by polymerization at 160 - 180°C for 20 - 40 min. The resin solidifies, becomes plastic, impervious to water and firmer than normal coatings. Various resins and varnishes were tried out, such as bakelite varnish, liquid bakelite, organic silicon  $\Phi\Phi$ -5T,  $\Phi\Phi$ -8CV,  $\Phi\Gamma$ -9 (EF-5T, EF-BSU, FG-9), furan varnishes  $\Phi\Gamma$ -1,  $\Phi\Gamma$ -4 (FL-1, FL-4) were used as binding materials. Preference is given to bakelite

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84698

S/135/60/000/005/005/009  
A115/A029

## Electrodes with Plastic, Gas-Shielded Coating for Welding of Low-Carbon and Low-Alloyed Steels

varnishes for their low price (Table 1). Over 200 different electrodes have been tested, containing marble, rutile, feldspar, fluorspar, martensite ore, hematite, talc, manganese, ferrosilicon, ferrotitanium, ferromolybdenum as well as admixtures of pulverized bakelite, colophony, calcinated soda, potash and starch. It has been proved by technological tests that with a high content of  $TiO_2$  thick slag is formed and on the surface blisters appear due to accumulation of gases under the slag. Addition of hematite and other oxides promotes slag dilution and better seam forming. Marble in the amount of over 10% promotes pore formation in the seams. Fluorspar prevents welding with alternating current. In the case of applying electrodes coated with organic varnishes, a reducing atmosphere appears in the arc due to a surplus of hydrogen and carbon. Bakelite resin  $[6C_6H_5(OH) \cdot 7CH(OH)]$  is superior to cellulose and starch  $(C_6H_{10}O_5)_n$ . The reducing property of bakelite resin is seen when comparing the chemical composition of metals fused with electrodes of the same composition on water glass and bakelite varnish (Table 2). The reducing property of bakelite resin promotes the passage of silicon into the seam (Fig. 1). The thickness of the coating on 4-mm rods has been

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S/193/61/000/008/003/007  
A004/A101

AUTHORS: Mazel', A.G., Candidate of Technical Sciences, Rogova, Ye.M.,  
Sorokin, L.I.

TITLE: Welding electrodes with plastic coating

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 8, 1961, 26-27

TEXT: The authors of the article, scientific workers of the Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov (All-Union Scientific Research Institute for the Construction of Main Pipelines) (VNIIST), have developed the ВСП-1б (VSP-1b) and ВСП-2 (VSP-2) electrodes with plastic coating intended for the welding of low-carbon and low-alloyed steels. The VSP-1b electrode can be used for either d-c or a-c welding, while the VSP-2 electrode operates on d-c of reversed polarity. Electrodes with plastic coating ensure an improved transition of alloying elements and carbon in the weld due to the reducing action of the gases during the burning of bakelite lacquer. The bakelite lacquer produces a gas shield protecting the arc from the surrounding air; moreover it creates a direct relationship between the lacquer quantity used in the mix and the carbon content in the weld metal. One of the main ways

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Welding electrodes with plastic coating

S/193/61/000/008/003/007  
A004/A101

of reducing the weld porosity during the welding with plastic-coated low-carbon or low-alloyed steel electrodes is to decrease the carbon content of the weld, therefore it should be avoided to add strong reducers to the coating mixture. By reducing the carbon, hydrogen and manganese content the sensitivity of the built-up metal to hot cracks can be decreased. The large-scale production of VSP-1b electrodes is carried out at the Lyuberetskiy zavod montazhnykh zagotovok Glavneftemontazha (Lyubertsy Plant of Assembly Materials of Glavneftemontazh) and at the Ramenskiy mekhanichskiy zavod (Ramensk Mechanical Plant) of "Glavstal'-konstruktsiya". The VSP-2 electrodes are produced at the Moskovskiy elektrodnyy zavod (Moscow Electrode Plant) of the Moscow Sovnarkhoz. The fabrication technology of plastic-coated electrodes remains essentially the same as that of water-glass-coated electrodes. The coating is polymerized at 130-140°C in the course of 40-45 minutes. The most important advantage of plastic-coated electrodes is their complete moisture-proofness. After having been stored in water for one month the electrodes have not changed their welding and technological properties. Radiographic investigations have shown satisfactory results.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magnistral'nykh truboprovodov (All-Union Scientific Research Institute for the Construction of Main Pipelines) (VNIIST)

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S/125/61/000/012/004/008  
D040/D112

AUTHORS: Mazel', A.G.; Rogova, Ye.M.; Sorokin, L.I.

TITLE: The alloying of the weld metal during welding with electrodes  
with a plastic coating

PERIODICAL: Avtomaticheskaya svarka, no. 12, 1961, 28-33

TEXT: The authors describe the effect of a plastic coating, developed at VNIIST for welding electrodes, on the transfer of separate alloying elements from the coating into the weld metal, as well as the effect of the individual ferroalloys in the coating on the properties of the weld. The plastic coating has been previously described (Ref.1: A.G. Mazel', Ye.M. Rogova and L.I. Sorokin, "Svarochnoye proizvodstvo", no.5, 1960; Ref.2: Ye.M. Rogova, "Svarochnoye proizvodstvo", no.8, 1960). It was found that coefficient of transfer of the alloying elements from the plastic coating was higher than from conventional coatings prepared with water glass. In the experiments, ferromanganese, ferrosilicon, ferrotitanium, ferromolybdenum and powder aluminum were introduced in gradually increasing quantities into the coating mixture, which contained bakelite resin, hematite, rutile, perovskite, kaolin, ferromanga-

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The alloying of the weld ...

S/125/61/000/012/004/008  
D040/D112

nese, ferrotitanium and slab silicate. The observed strengthening effect of separate ferroalloys is discussed and illustrated in graphs. The effect of increased amounts of FeTi on the properties of the weld metal could not be evaluated when aluminum was simultaneously added, because of the resultant excessive porosity of the metal. Electrodes with a high content of Mo in the coating, produced welds with an ultimate strength of above 90 kg/mm<sup>2</sup> and satisfactory elongation and toughness. Conclusions: (1) Plastic coatings ensure more effective transfer of the alloying elements into the welds than coatings prepared with water glass, which means that the consumption of scarce ferroalloys may be cut. (2) The mechanical properties of the weld metal can be regulated over a wide range owing to the high transfer of alloying elements. The strengthening effect of molybdenum is of particular interest. (3) In connection with the possibility of obtaining welds with a high carbon content, and the high transfer of alloying elements, electrodes with a plastic coating may be employed for surfacing. There are 3 figures and 3 Soviet references.

ASSOCIATION: VNIIST

SUBMITTED: March 27, 1961

Card 2/2

MAZEL', A.G., kand.tekhn.nauk; ROGOVA, Ye.M., inzh.; SOROKIN, L.I., inzh.

New metallurgical characteristics of electrodes with plastic coverings. Svar.proizv. no.1:10-12 Ja '62. (MIRA 15:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov.

(Electrodes)

ACC NR: AP7001835

SOURCE CODE: UR/0135/66/000/012/0003/0006

AUTHOR: Yerokhin, A. A. (Doctor of technical sciences); Sorokin, L. I. (Engineer)

ORG: none

TITLE: Effect of the type of specimen and conditions of welding on the hot cracking resistance of metal

SOURCE: Svarochnoye proizvodstvo, no. 12, 1966, 3-6

TOPIC TAGS: weldment testing machine, weld evaluation, test construction, welding electrode /IMET-TsNIChM weldment testing machine

ABSTRACT: The hot cracking resistance of a metal during its welding is quantitatively estimated by means of forced deformation of the welding zone of the specimen and the determination of the maximum rate of deformation at which hot cracks still are absent in the zone of fracture. In this connection the effect of testing conditions on the critical deformation rate  $v_{cr}$  of the specimen, characterizing the resistance of the weld metal to the formation of hot cracks, is examined with respect to the newly developed IMET-TsNIChM test machine in which deformation is accomplished by means of longitudinal or transverse bending of a test specimen at a

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UDC: 621.791.01

ACC NR: AP7001835

fixed rate. Two principal types of test specimens were tested: the composite specimen, with the welding being performed by means of a consumable electrode across a joint held together by tack welds (Fig. 1, a) and the continuous specimen with a neck that is melted during the testing process by means of argon arc welding with a consumable (tungsten) electrode (Fig. 1, b).

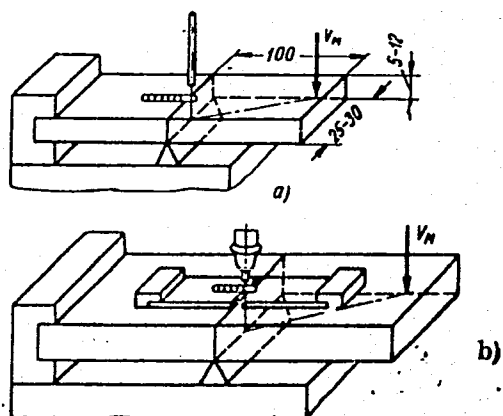


Fig. 1. Schematic representation of testing in the IMET-TSNIChM machine during consumable-electrode welding of composite test specimens (a) and argon-arc tungsten-electrode welding of continuous test specimens (b )

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ACC NR: AP7001835

A new type of test specimen (Fig. 2) has also been proposed: following multi-layer welding with the tested electrode, a plate 17-20 mm wide is cut out of the weld metal and machined,

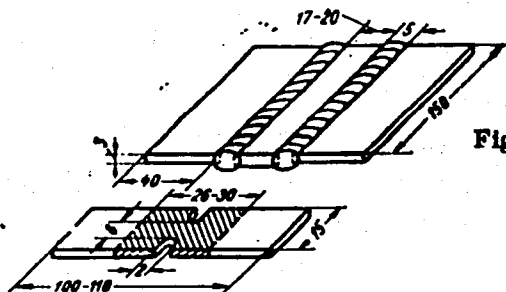


Fig. 2. Preparing a continuous specimen for the testing of weld metal

after which, on also using the tested electrodes, plates of base metal are welded on to both sides of this plate by means of a broad weld (~5 mm). After welding the reinforcement is removed and the specimen is cut across the weld. The width of the built-up metal then is 26-30 mm, compared with 10 mm for the specimens described above. And the influence of the base metal is almost completely eliminated. Both the composite and the continuous types of speci-

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ACC NR: AP7001835

mens showed a similar course of the dependence of  $v_{cr}$  on the Mo and W content of the welding electrode: one a certain level of Mo (and W) in the weld is reached,  $v_{cr}$  decreases and this is accompanied by a marked decrease in the plasticity of the weld metal (embrittlement). Thus both types of specimens for testing built-up metal more or less eliminate the influence of the base metal on the test results, and the tests of both types of specimens yield qualitatively similar but quantitatively somewhat different results. Further, the effect of welding regimes on  $v_{cr}$  was investigated on using various types of electrodes (electrode diameter 3 mm, weldment thickness 7 mm); these experiments showed that during welding at a fixed rate (0.45 cm/sec)  $v_{cr}$  reaches its maximum in the presence of a current of 80-85 a, and in general that the resistance of weld metal to hot cracking can be enhanced by using small-diameter electrodes, increasing the welding rate and employing various means of draining the heat from the weld. Orig. art. has: 7 figures.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 005

Card 4/4

SOROKIN, L.I., kand. tekhn. nauk, red.; DROZDOVSKAYA, I., red.;  
KHAR'KOVSKAYA, L., tekhn. red.

[Problems in reducing the noise of jet engines; collection  
of translations] Problemy umen'shenia shuma reaktivnykh  
dvigatelei; sbornik perevodov. Moskva, Izd-vo inostr. lit-  
ry, 1961. 141 p. (MIRA 15:2)

(Airplanes--Jet engines)

S/081/62/000/005/002/112  
B158/B110

AUTHORS: Kozmanov, Yu. D., Sorokin, L. M.

TITLE: The structure of molybdenum ferrite

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1962, 26, abstract  
5B150 (Tr. Ural'skogo politekhn. in-ta, sb. 114, 1961,  
154 - 155)

TEXT: It is established that when  $\text{Fe}_2\text{MoO}_4$ , obtained by solid phase reaction between  $\text{FeO}$  and  $\text{MoO}_2$ , is oxidized, parameter  $a$  increases from 8.484 to 8.493 kX; the degree of reversion  $\lambda$  (obtained by the Bertheau method) remains constant at 0.496 for non-oxidized ferrite and is 0.49 for oxidized ferrite, which indicates complete reversion of the spinel; parameter  $u$  of the O atom in the structure is determined by Patterson synthesis along the spatial diagonal and by comparing  $F$  (experimental) and  $F$  (calculated). It is established that  $u$  increases at oxidation from 0.37 to 0.38, which differs little from theoretical values for spinel. [Abstracter's note: Complete translation.]

Card 1/1

LYASHCHENKO, B.G.; SOROKIN, L.M.

Determining the position of carbon in cementite by the neutron diffraction method. Kristallografiia 8 no.3:382-387 My-Je '63.  
(MIRA 16:11)

1. Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii imeni I.P.Bardina.

L 12924-65 EWT(m)/EWP(t)/EWP(b) JD/JG AFETR

ACCESSION NR: AP4046618

S/0181/64/006/010/3050/3058

AUTHORS: Yelistratov, A. M.; Sorokin, L. M.

TITLE: On the nature of reversible block formation during the decay of a Cu-Be solid solution

SOURCE: Fizika tverdogo tela, v. 6, no. 10, 1964, 3050-3058

TOPIC TAGS: <sup>27</sup>beryllium containing alloy, <sup>27</sup>copper alloy, block formation, solid solution, hardening method

ABSTRACT: The results are presented of an investigation of the reversible block formation that arises during the decay of a super-saturated solution Cu-2%Be during the maximum hardening (350C in 1 hour). The investigations were made by two independent methods: (a) anomalous (non-Bragg) scattering of x-rays by a coarse-grain sample; (b) transmission electro microscopy, including microdiffraction. The anomalous scattering method was described in detail by

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L 12924-65

ACCESSION NR: AP4046618

5

one of the authors (Yelistratov, DAN SSSR, v. 69, 337, 1949). The electron microscope used was type UEMYe-100 at an accelerating voltage of 75 kV, with thin films. The methods of preparing the coarse-grain samples and the thin films are briefly described. The results obtained by both methods are described in considerable detail. They indicate that during the maximum hardening stage there is produced an elastically reversible non-oriented block structure due to the appearance of a net of coherent  $\gamma$ -phase segregation. The block boundaries do not have a dislocation nature, and can greatly influence the hardening of an aging alloy, because they present obstacles to the dislocation motion. The formation of light-field and dark-field electron-microscopic images of a crystal containing small disoriented regions is considered on the basis of the dynamic theory in the two-wave approximation. These results also show the presence of  $\gamma$ -phase segregation. In view of the fact that elastically reversible block formation was observed also in the decay of ionic solid solutions (K, Na)Cl (Yelistratov and R. A.

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L 12924-65

ACCESSION NR: AP4046618

Zvinshuk, FTT v. 2, 2370, 1960), it is concluded that the hardening due to this block formation is common to systems with different types of bonds. Orig. art. has: 8 figures and 2 formulas.

ASSOCIATION: Institut poluprovodnikov AN SSSR, Leningrad (Institute of Semiconductors AN SSSR)

SUBMITTED: 25Apr64

ENCL: 00

SUB CODE: SS, MM

NR REF SOV: 004

OTHER: 006

Card 3/3

ACC NR: AP7005837

SOURCE CODE: UR/0131/66/008/012/3523/3534

AUTHOR: Sorokin, L. M.

ORG: Institute of Semiconductors, AN SSSR, Leningrad (Institut poluprovodnikov AN SSSR)

TITLE: Electron-microscopic investigation of the initial stages of the decay of a supersaturated Cu - 2% Be solid solution

SOURCE: Fizika tverdogo tela, v. 3, no. 12, 1966. 3523-3534

TOPIC TAGS: beryllium containing alloy, copper alloy, solid solution, crystal structure, electron scattering, metal hardening

ABSTRACT: The purpose of the investigation was to determine the structural changes occurring in the solid solution during the initial stages, and to compare the results with x-ray diffraction data on this alloy. The initial samples were cut from a rolled strip 0.25 mm thick in the form of circles of 20 mm in diameter. The initial stage of the decay was tested during tempering for five hours at 200C and one hour and 250C. After heat treatment, the samples were reduced to a foil in an electrolyte and examined in the UEM-100 electron microscope at an accelerating voltage of 75 kv. Examination and analysis of a large number of microphotographs have shown that a band structure is formed in the majority of cases, the direction of which coincides with the line of intersection of the plane of the foil with planes of the {110} type, with little difference observed as a result of variations in the heat treatment. The particles initially separated during the decay serve as sources of stresses in a direction per-

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SOROKIN, L.N.

Pedestrian and highway traffic intersections on various levels in the streets and squares of Moscow. Gor. Khoz. Mosk. 32 no. 11:10-17 N '58. (MIRA 11:11)

1. Glavnyy inzhener Instituta general'nogo plana.  
(Moscow--Traffic engineering)  
(Moscow--Underpasses)

05440

SOV/120-59-3-11/46

# A Gas Discharge Scintillation Counter

Another favourable factor is that the mean free path of electrons in argon is a maximum at 1 eV. Isopentane was chosen as the quenching constituent. It was found that the mixture of ~10 mm Hg of isopentane and ~100 mm Hg of argon has no deleterious effect on the Sb-Cs photo-cathodes. Fig 1 shows the construction of the experimental counters. In Fig 1, 1 is the envelope, 2 is the cathode (a cylindrical grid), 3 is the anode (Mo wire 0.1 mm in diameter), 4 is the cathode<sub>2</sub> lead, 5 is the semi-transparent photo-cathode (10 cm<sup>2</sup> approx.), 6 is the photo-cathode output terminal, 7 is a pin which is in electrical contact with the anode wire, 8 sealed off connection to the vacuum pump, 9 antimony evaporator, 10 is a sealed off connection to the cesium ampule and 11 is a kovar tube which serves as the anode terminal. The counter is ~200 mm long and 25 mm in diameter. It has been established that such self-quenching gas discharge counters may be used to record scintillations from crystals such as Na<sup>+</sup>(Tl). With a 10 mm thick Na<sup>+</sup>(Tl) crystal the efficiency for Co<sup>60</sup> γ-rays is higher by a

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L 16551-65 EWT(m) AEDC(b)/SSD/AFWL/DIAAP

ACCESSION NR: AP4044670

S/0120/64/000/004/0081/0084

AUTHOR: Dmitriyev, A. B.; Katyushina, V. V.; Sorokin, L. S.

TITLE: Ionization chamber<sup>19</sup> and counter for recording radiation in the  
HL <sub>$\alpha$</sub>  line

SOURCE: Pribo<sup>ry</sup>\* i tekhnika eksperimenta, no. 4, 1964, 81-84

TOPIC TAGS: ionization chamber, gas discharge counter, solar radiation measurement, night sky luminescence measurement, hydrogen L line radiation

ABSTRACT: A KFL-2 ionization chamber and an SPM-1 Geiger-Muller gas-discharge counter used in studies of solar radiation and night-sky luminescence are described. Both devices are intended for recording hydrogen radiation in the L line. The chamber consists of a stainless steel cylindrical frame 33-mm in diameter and flanges. Graphite coatings on mica plates serve as electrodes. A LiF window 10-mm in diameter is fixed in a copper cone. The chamber is filled with NO up to a pressure of 15 mm Hg. An ionization current saturation up

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L 16551-65

ACCESSION NR: AP4044670

to 0.1  $\mu$ a is maintained with a 300v potential difference. The counter consists of a stainless steel tube 18-mm in diameter with both ends hermetically closed with kovar discs. A LiF window 2.5-mm in diameter is hermetically sealed to the frame with epoxy cement. The counter is filled with a composition of 10 mm Hg of NO, 50 mm Hg of Ar, and 550 mm Hg of Ne. At a load resistance of 10 Mohm the sensitivity of the recording device is approximately 1v; normal operating voltage is 900v; the length of the counting rate characteristic plateau is more than 100v; this plateau has a considerable incline (0.25% per volt at a count rate of  $6 \times 10^4$  pulses/min). The chambers were found to be basically sensitive to radiation wavelengths from 1100 to 1380Å. Maximum sensitivity was found at 1200Å. In all cases counter curve shapes coincided well with the ionization chamber curve, except for the region of 1200Å where a certain diminution of counting speed occurred. Measured ionization chamber sensitivity was found to vary very little from chamber sample to sample and amounted to  $7 \times 10^{-2}$  electrons per photon, which was a few times less than the calculated value. Orig. art. has: 5 figures.

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L 16551-65

ACCESSION NR: AP 344670

ASSOCIATION: Institut prikladnoy geofiziki AN SSSR (Institute of  
Applied Geophysics, Academy of Sciences, SSSR)

SUBMITTED: 16Aug63

ENCL: 00

SUB CODE: ES, NP

NO REF SOV: 001

OTHER: 002

Card 3/3

KOBRIN, M.M., kand. tekhn. nauk, dotsent; PROSHKO, V.M., kand. tekhn.nauk,  
dotsent; SORKIN, L.S., aspirant

Using analytic methods and electronic computers in calculating  
residual stresses. Izv. vys. ucheb. zav.; mashinostr. no.10;  
78-92 '64 (MIRA 18e1)

1. Moskovskiy institut khimicheskogo mashinostroyeniya.

SOROKIN, L.V., student III kursa

Description of a laboratory arrangement for the investigation  
of fading and the measurement of field strength. Sbor.stud.nauch.  
rab.LEIS no.1:44-52 '59. (MIRA 13:4)

1. Leningradskiy elektrotekhnicheskiy institut svyazi imeni  
prof. M.A.Bonch-Bruyevicha.  
(Radio--Receivers and reception)

Sorokin L.V.

PHASE I BOOK EXPLOITATION 307/4001

Leningradskiy elektrotekhnicheskii institut svyazi im. M.A. Bonch-Bruyevicha  
Sbornik studentcheskikh nauchnykh rabot, vyp. 1 (Collection of Student Scientific Projects, No. 1) Leningrad, 1959. 87 p. 500 copies printed.

Additional Sponsoring Agency: USSR, Ministerstvo svyazi.

Resp. Ed.: I.G. Klyatskin, Professor, Doctor of Technical Sciences; Resp. Secretary: O.N. Sapronov, Engineer, Tech. Sci. (Resp. Ed.). Gal'chinskaya, Editorial Board: I.G. Klyatskin (Resp. Ed.), Professor, Doctor of Technical Sciences, O.N. Sapronov (Resp. Secretary), Engineer, M.P. Dolukhanov, Professor, B.P. Zhuravskiy, Student, A.A. Gol'din, Engineer, Z.I. Frolovich, Engineer, En. Chermak, Docent, V.V. Kuznetsov, Docent, I.M. Metter, Docent, Z.M. Neyman, Docent, B.I. Tikhonov, Engineer, I.M. Pechichev, I.K. Babrovskaya, Docent, and D.M. Shapiro, Docent.

PURPOSE: This collection of articles was published in order to acquaint the public with the work of students of the Leningrad Communications Institute named M.A. Bonch-Bruyevich. The articles may also be useful to communication technicians.

COVERAGE: The papers presented at the 1958 conference of the Scientific Student Society of the Institute concerned such new problems as electronic automatic telephone exchanges, electronic computers, colored television, and electronic telegraph. This collection contains 12 articles, which were selected from the 90 papers submitted at the conference. No personalities are mentioned. References accompany most of the articles.

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Koropets O.D. Capacitor and Semiconductor High-Speed Memory Unit	71
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8-10-60

AVAILABLE: Library of Congress

Card 4/4

SCOROKIN, L.Z.

MEOS, A.I., doktor tekhnicheskikh nauk; RODIONOV, I.M., inzhener;  
SOROKIN, L.Z., kandidat tekhnicheskikh nauk; BAULINA, N.L.,  
inzhener; SHUBAYEV, N.V., inzhener

Artificial karakul made of viscose fiber. Leg.prom.15 no.7:43-  
44 J1'55. (MIRA 8:10)

(Fur, Artificial)

SOROKIN, M., neshtatnyy korrespondent (Kazan')

People are the most important factor. Mest.prom. i khud.promys. 4.no.3:  
32 Mr '63. (MIRA 16:4)  
(Kazan--Tobacco industry) (Efficiency, Industrial)

SOROKIN, M.

Workers' initiative and norms. Sots. trud 8 no.6:96-98 Je '63.  
(MIRA 16:9)

(Kharkov—Turbines) (Production standards)

SOROKIN, M.A., inzhener-polkovnik

Transport trailer. Vest.Vozd.Fl. no.8:74 Ag '61. (MIRA 14:8)  
(Truck trailers)

SHMAKOVA, V.I.; YUZHAKOVA, N.N.; REZNICHENKO, V.G.; GLEBOV, I.T.; VOLKOV, A.S.;  
URZLYA, N.Ye.; BEKHTEREV, P.A.; RYS', G.I.; VORONINA, M.N.; GVOZDINTS-  
KIY, I.M.; VARAKSINA, M.P.; MASTERSKIKH, M.A.; GONCHAROVA, V.A.;  
BICHEVINA, A.N.; SOROKIN, M.A., red.; GRIN', Ye., tekhn.red.

[Economy of Altai Territory during the past 40 years; a statistical  
manual] Narodnoe khoziaistvo Altaiskogo kraia za 40 let. Sovetskoi  
vlasti; statisticheskii sbornik. Barnaul, Altaiskoe knizhnoe izd-vo,  
1957. 110 p. (MIRA 11:3)

1. Altayskiy kray. Statisticheskoye upravleniye. 2. Statisticheskoye upravleniye Altayskogo kraya (for all except Sorokin, Grin')
1. 3. Nachal'nik Statisticheskogo upravleniya Altayskogo kraya (for Sorokin)  
(Altai territory--Statistics)

SOROKIN, Makariy Andreyevich; SAMSONOV, V.M., red.; LELYUKHIN, A.A.,  
tekhn.red.

[Designing and building apartment houses and public buildings  
in foreign countries] Praktika proektirovaniia i stroitel'stva  
zhilykh i grazhdanskikh zdaniï za rubezhom. Moskva, Izd-vo M-va  
kommun.khoz.RSFSR, 1960. 106 p. (MIRA 13:7)  
(Apartment houses) (Public buildings)

SOROKIN, M. F. Cand Tech Sci -- (diss) "Problems of the dynamics of  
automatic regulation of the level of transmission on main cable of long-  
distance communication." Len, 1958. 14 pp (Min of Communications USSR.  
Len Electrical Engineering Inst of Communications in Professor <sup>M.A.</sup> Bonch-Bruyevich),  
150 copies (KL, 36-58, 113)

ACC NR: <sup>(N)</sup> L 11653-66 AP6001678

EW(m)/EWP(j)

RM

SOURCE CODE: UR/0303/65/000/006/0001/0006

AUTHOR: <sup>44,55</sup> Kochnova, Z. A.; <sup>44,55</sup> Sorokin, M. F.

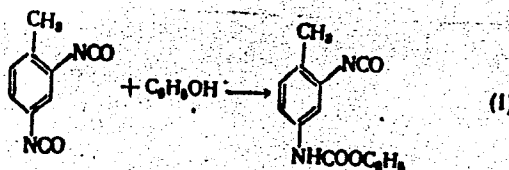
ORG: none

TITLE: Polyurethane varnishes from "blocked" isocyanates and simple polyesters

SOURCE: Lakokrasochnyye materialy i ikh primeneniye, no. 6, 1965, 1-6

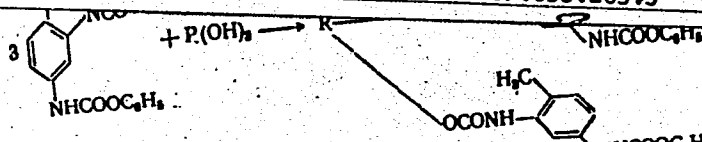
TOPIC TAGS: polymer, varnish, polyurethane, polyester, hardening

ABSTRACT: This work represents an attempt to obtain polyurethane varnishes from polymeric glycidic esters. It was desirable to impart unlimited storability to the varnishes and to prevent gelling on addition of pigments. To do so, "blocked" polyurethanes were synthesized which contained no residual free functional groups (hydroxyl and isocyanate groups). The synthesis of "blocked" polyurethanes was accomplished in two stages:



Card 1/2

UDC: 667.633.263.3



APPROVED FOR RELEASE: 08/23/2000

CIA-RDP86-00513R001652510008-3"

where  $\text{R}(\text{OH})_3$  is polymeric alkyl or aryl glycidate. One- and two-component coatings were obtained from the "blocked" urethanes. The coatings can be hardened by heat treatment; 1.5 hours at 160C proved to be optimal conditions. The obtained films have excellent appearance, good physical and mechanical properties, and high chemical stability. Orig. art. has: 3 figures and 5 tables. [VS]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 005/ ATD PRESS: 4175

Card 2/2

31

CA

26

Hygienically improved "KhIoT" varnishes (varnishes developed by the Khar'kov Institute for Safeguarding Labor, KhIoT). M. F. Surukin. *Byull. Nauchnoi Tekh. 1939*, No. 6, 28-30; *Khim. Referat. Zhur. 1940*, No. 1, 115.—The Inst. developed and tested the methods used for prep. nitrocellulose varnishes and solvents which decrease the noxious effect of spraying. However, from the tech. and economical point of view the "KhIoT" varnishes and paints still possess disadvantages which prevent their application under production conditions.

W. R. Henth

ASPHSLA METALLOGICAL LITERATURE CLASSIFICATION

Modified melamine-formaldehyde resins. V. S. Kiselev and M. P. Sorokin. U.S.S.R. 66,303, May 31, 1946. The second stage of the production of these resins, i.e., the treatment of methylol compounds of melamine, is hastened by use of a  $H_2O$ -BuOH medium and a catalyst that is sol. in BuOH, such as a fatty acid of plant origin. M. Hosh

31

34

NEW SYNTHETIC RESINS. A. I. Lazarev and M. E. Sorokin.  
*Khim. Prom.* 1947, No. 5, 20-5. Survey based on pub-  
lished and patent literature M. Hirsch

ALPHABETICAL LITERATURE CLASSIFICATION

101083 442 047 101

101083 442 047 101

101083 442 047 101

*Sorokin, M.F.*  
LAZAREV, A.I., professor, doktor tekhnicheskikh nauk; SOROKIN, M.F.,  
dotsent, kandidat tekhnicheskikh nauk

New synthetic resins. Khim.prom.no.5:148-153 My'47. (MLRA 8:12)  
(Resins, Synthetic)

LAZAREV, A.I.; SOROKIN, M.F.

[Synthetic resins for lacquers] Sinteticheskie smoly dlia lakov.  
Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1953. 400 p.  
(MLRA 7:6)

(Lacquers and lacquering) (Resins, Synthetic)

NOTE, A.F.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

<u>Name</u>	<u>Title of Work</u>	<u>Nominated by</u>
Iazarov, A.I. Sorokin, A.F.	"Synthetic Resins for Lacquers and/or Varnishes" (student manual)	Moscow Chemical-technological Institute Leonid D.I. Mandel- steyn

SO: W-30604, 7 July 1954

SOROKIN, M. F.

USSR/Chemistry - Resins, epoxy

FD-507

Card 1/1 : Pub. 50-6/23

Authors : Lazarev, A. I., Prof., Dr. Tech. Sci., and Sorokin, M. F., Cand. Tech Sci.

Title : Synthetic resins derived from epoxy-compounds.

Periodical : Khim. prom.<sup>5</sup>, 280-286 (24-30), Jul/Aug 1954.

Abstract : On the basis of foreign publications, discuss the chemical and technological properties of epoxy-resins. Nineteen references, all foreign - among them 2 contributions by Russian scientists to foreign journals. Two graphs, 8 tables.

Institution :

Submitted :

SOROKIN, M. F.

<sup>15</sup>  
Synthetic resins M. F. Sorokin and E. S. Venkova.  
 U.S.S.R. 106,219, July 25, 1957. Diphenylolpropane or  
 resorcinol diglycerides are treated with unsatd. or satd.  
 amino alcs., e.g., *N,N'*-bis(3-allyloxy-2-hydroxypropyl)-  
 ethylenediamine or *N,N'*-bis(3-phenoxy-2-hydroxypropyl)-  
 ethylenediamine. These resins are air-resistant and form  
 films without use of vegetable oils. U.S.S.R. 106,222.  
 Diphenylolpropane or resorcinol diglycerides are treated  
 with primary monoamines, e.g. BuNH<sub>2</sub>. M. Hosh.

3  
 4-allyl  
 2may

mm

SOROKIN, M. F.

Amino alcohols M. F. Sorokin and E. S. Venkova.  
U.S.S.R. 106,224, July 23, 1957. Compds. of the type  
 $ROCH_2CH(OH)CH_2NH(CH_2)_nNHCH_2CH(OH)CH_2OR$   
where R is an alkyl, aryl, or aralkyl and  $n = 3-10$  are ob-  
tained by the reaction of an aliphatic diamine with a mono-  
glycidyl ether in MeOH or EtOH at 20-25°. M. Hoesch

RW  
MT

*SOROKIN, M.F.*

SOROKIN, M.F., kand.tekhn.nauk.

Epoxide lacquer resins. Khim.prom. no.5:310-317 J1-Ag '57.  
(MIRA 10:12)

(Resins, Synthetic)

AUTHORS: Sorokin, M. F., Laguzina, A. M. SOV/156-58-1-26/46

TITLE: Interaction of Some Aryl-Glycide Ethers With the Alcohols of the Aliphatic Series (Vzaimodeystviye nekotorykh arilglitsidnykh efirov so spirtami alifaticheskogo ryada)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 1, pp. 110 - 114 (USSR)

ABSTRACT: The epoxy-resins obtained from compounds with an  $\alpha$ -oxide-group exhibit a number of valuable properties (Refs 1,2). The authors tried to synthesize epoxy resins of a new type from resorcin-diglycide ether and from 2,2-di-(p-oxyphenyl)-propane, and from polyatomic alcohols of the aliphatic series. For the purpose of explaining the production mechanism of these resins, the authors investigated the reaction kinetics between phenylglycide-ether and resorcin-diglycide ether, as well as a number of 1- and 2-atomic alcohols. Amongst a great number of reports available, there is none dealing systematically with the influence exercised by the concentration of the catalyst and other factors on the kinetics of the reaction. For the purpose of determining the constants of the reaction-velocity the authors

Card 1/4

Interaction of Some Aryl-Glycide Ethers With the  
Alcohols of the Aliphatic Series

SOV, 156-58-1-26/46

introduced the experimentally obtained data in the kinetic equations. The reaction of the glycide ethers with alcohols shows some peculiarities. As results from the scheme, a secondary hydroxyl-group appears in the developed ether instead of the primary hydroxyl group which had entered the reaction. The secondary hydroxyl group is capable, on its turn (at a lower velocity, however,) to react with another molecule of the glycide ether. The reaction thus takes place at any ratio whatever of the glycide ether and of the alcohol under a constant concentration of the hydroxyl groups. Consequently, it must be a pseudo-monomolecular reaction. Calculations have shown a satisfactory conformity of the constants. The constant is independent of the concentration of the catalyst. Table 1 shows the constants for different concentrations. Analogous results were obtained by a similar investigation with n-butyl alcohol. Furthermore, the influence of the molecular weight, the structure and the number of atoms of the alcohols on the reaction concerned was investigated. Methyl, ethyl, n-butyl, primary octyl, isopropyl alcohol and octanol-2 were used, and

Card 2/4

Interaction of Some Aryl-Glycide Ethers With the  
Alcohols of the Aliphatic Series

SOV/156-58-1-26/46

ethylene glycol, diethylene glycol and triethylene glycol. The results obtained from these tests are shown in table 2. These data show that with a relation of 1:1 of the phenyl-glycide-ether and of a monoatomic alcohol the increase of the molecular weight of the alcohol has no influence on the constant of the reaction velocity for methyl, ethyl and n-butyl alcohol. In the case of a ratio of ether and the monoatomic alcohols of 1:10, the constant of methylalcohol with respect to primary octyl alcohol decreases. Secondary alcohols are less reactive than the primary ones. The reactivity of the poly atomic alcohols (except ethylene glycol with a ratio of phenyl-glycide ether: ethylene glycol = 1:1) is greater than that of the monoatomic alcohols. Within the series of glycols the reactivity of ethylene glycol with respect to triethylene glycol increases. 8 new, undescribed compounds were isolated in the course of the work. Their constants are shown in table 4. There are 4 tables and 5 references.

Card 3/4

Interaction of Some Aryl-Glycide Ethers With the  
Alcohols of the Aliphatic Series

SOV/156-58-1-26/46

ASSOCIATION: Kafedra tekhnologii lakov i krasok Moskovskogo khimiko-tekhno-  
logicheskogo instituta im.D.I.Mendeleyeva (Chair of Varnishes  
and Colors of the Moscow Chemical and Technological Institute  
imeni D.I.Mendeleyev)

SUBMITTED: September 30, 1958

Card 4/4

SOV/64-58-6-7/15

AUTHOR: Sorokin, M. P., Candidate of Technical Sciences

TITLE: Glyptal Resins Modified With Tall Oil (Gliftalevyie smoly, modifitsirovannye tallovym maslom)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 6, pp 346-349 (USSR)

ABSTRACT: In the varnish color industry there are many possibilities for the application of tall oil. The oil or the fatty acids isolated from it can also be used in place of vegetable oils as modifying components in polyester resins, whereby glyptal resins forming high quality films are obtained. V. S. Kiselev and the author of the present article jointly suggested a method for the production of printer's varnish ("olifa T") for printing dyes (Ref 6). In the present paper the influence exerted by temperature upon the reaction of esterification of tall oil and glycerin, as well as upon the condensation of the esters obtained with the anhydride of phthalic acid is analyzed. Esterification was carried out at different temperatures, and the catalysts used were CaO, MnO<sub>2</sub>, and PbO in quantities of 0,05 %. The results of these analyses as well as the results of the synthesis of resin are given in a table.

Card 1/2

Glyptal Resins Modified With Tall Oil

SOV/64-58-6-7/15

The resin synthesis was carried out in the same apparatus used in the esterification. These results show that the second method referred to furnishes better results. The acid number of the printer's varnishes obtained at a condensation temperature of 160° did not come up to the TU, whereas varnishes synthesized at 230-250° complied fully with TU requirements. It was stated that a 10 % addition of colophony to the tall oil had no influence upon the process of resin production, that is to say, neither upon the quantities obtained nor on the composition of the resin. There are 5 tables and 6 references, 5 of which are Soviet.

Card 2/2

5(3), 15(8)

SCV/156-59-1-40/54

AUTHORS:

Sorokin, M. F., Laguzina, A. M.

TITLE:

The Synthesis and Investigation of Resins From Certain Aryl-diglycide Ethers and Bivalent Alcohols (Sintez i issledovaniye smol iz nekotorykh arildiglitsidnykh efirov i dvukh-atomnykh spirtov)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 154 - 158 (USSR)

ABSTRACT:

In order to obtain new soluble epoxide varnishing resins, an attempt was made to resinify diglycide ethers of resorcin and of diphenylolpropane with ethylene glycol and diethylene glycol. Resins of this type have not yet been described in scientific publications. An investigation was made into the influence on resinification of the reaction temperature, the component ratio, the structures of the alcohol and of the diglycide ether. Diethylene glycol reacts more readily than ethylene glycol does. A high glycide ether share accelerates resinification. The temperature dependence of the glycide values is graphically represented (Fig 1). With a glycide

Card 1/2

The Synthesis and Investigation of Resins From Certain Aryl-diglycidic Ethers and Bivalent Alcohols BOV/156-59-1-40/54

content of less than 10%, insoluble, solid resins are formed. The diglycidic ether of dioxy-diphenylol-propane is less reactive than the analogous ether of resorcin (Diagram, Fig 2). The hardening of the resin films was effected by means of hexamethylene-diamine, as ethylene-diamine hardened films had turned out to be less resistant to water and chemical reagents. The most favorable properties of the resins obtained (hardness, flexibility, resistance to  $H_2O$ ,  $NaOH$  and  $HCl$ ) are listed in a table. There are 2 figures, 1 table, and 10 references, 2 of which are Soviet.

ASSOCIATION: Kafedra tekhnologii lakov i krasok Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleeva (Chair of the Technology of Varnishes and Paints of the Moscow Institute of Chemical Technology, imeni D. I. Mendeleev)

SUBMITTED: October 27, 1958

Card 2/2

SOROKIN, M.F.; SHOBE, L.G.

Polymers of glycidic ethers. Part 1: Polymerization of  
phenylglycidic ether under the influence of alkaline catalysts  
and initiating agents. Vysokom.sped. 1 no.10:1487-1492  
0 '59. (MIRA 13:3)

1. Moskovskiy khimiko-tekhnologicheskiy institut im.D.I.  
Mendeleevaya.  
(Ether) (Polymers)

SOV/64-59-2-11/23

5(1), 15(7)

AUTHOR:

Sorokin, M. F., Docent, Candidate of Technical Sciences

TITLE:

Synthesis of Light Typographic Drying Oils From Distilled Tall Oil  
(Sintez svetlykh tipografских oil iz peregnannogo tallovogo masla)

PERIODICAL:

Khimicheskaya promyshlennost', 1959, Nr 2, pp 144-149 (USSR)

ABSTRACT:

Since the dark color of drying oils (DO) prepared from unpurified tall oil (I) is a considerable disadvantage, some possibilities of purifying (I) are investigated in the present case. The purification may be carried out according to physical methods (vacuum- and steam distillation, application of solvents) and chemical methods (with acids, lyes, and other reagents, as well as selective esterification). On the basis of a survey and explanation of these methods it is assumed that the two above-mentioned ways of distillation are the most suitable and corresponding experiments are made with crude tall oil (table of characteristic values). The experiments of vacuum distillation (Table 1, fractions obtained), as well as of steam distillation (Table 2) showed that in both cases lighter tall oil is obtained. In this connection the yield was somewhat higher in the second case, on the other hand the (DO) produced from steam-distilled tall oil have a dark color. Therefore, further experiments on the preparation of first-rate (DO) were made on the

Card 1/2

Synthesis of Light Typographic Drying Oils From Distilled SOV/64-59-2-11/23  
Tall Oil

basis of vacuum-distilled (I) (obtained at 8 mm Hg (Table 5) and 5 mm Hg (Table 6)). Several combinations of a synthesis of glyptal (Table 3 with different catalysts, Table 4, from different fractions of (I) of the 5 mm Hg vacuum distillation) were made, and finally it was found that glyptals and the (DO) produced therefrom should be produced from the whole distillate instead of from the individual fractions of vacuum distillates of (I). The following composition is recommended: 64% (I), 14% glycerin, 22% phthalic acid chloride and 0,05% pyrolusite or litharge. The mixture consisting of (I), glycerin, and the catalyst is heated for 1 hour to 160° with simultaneous mixing (the sample must have an acid number AN = 125-145), phthalic acid chloride is then added within 30 minutes, temperature is increased to 200° and at 200-210° the reaction is maintained for 6-7 hours until an AN=20. There are 6 tables and 21 references, 4 of which are Soviet.

Card 2/2

5(3), 15(8)  
AUTHORS:

Sorokin, M. F., Lyalyushko, K. A.

SOV/156-59-2-36/48

TITLE:

The Synthesis of Resins of Aryldiglycid-ethers and Arylamines  
(Sintez smol iz arildiglitsidnykh efirov i arilaminov)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya  
tekhnologiya, 1959, Nr 2, pp 358-362 (USSR)

ABSTRACT:

The paper under review reports for the first time on the synthesis of resins from diglycid ethers of the resorcine or of the p,p'-dioxydiphenylpropane with aniline or N,N'-disubstituted 4,4'-diaminodiphenylmethane. By reducing the functionality of the diamine by substituting one each hydrogen atom in each amino group, it became possible to produce resins soluble in acetone, acetates and a 1 : 1 - mixture of butanol with xylene. The molar proportions, reaction-temperatures, and physical data of resins produced from aniline are shown in Table 1. Table 2 shows the same data for resins of N,N'-disubstituted 4,4'-diaminodiphenylmethane. By adding ethylene diamine, hexamethylene diamine, or phthalic anhydride as a hardening agent to the resin solution, resin lacquer films were produced. At room temperature, only dull, inferior lacquers were obtained; hardening tests were there-

Card 1/2

The Synthesis of Resins of Aryldiglycid-ethers and  
Arylamines

SOV/156-59-2-36/48

fore carried out at 100°. Hexamethylenediamine as a hardening agent produced at this temperature lacquer films with excellent physical and chemical properties (Table 3). There are 3 tables and 7 references, 3 of which are Soviet.

PRESENTED BY: Kafedra tekhnologii lakov i krasok Moskovskogo khimiko-  
tekhnologicheskogo instituta im. D. I. Mendeleyeva (Chair for  
the Technology of Lacquers and Dyes Moscow Institute of Chemical  
Technology imeni D. I. Mendeleyev)

SUBMITTED: November 10, 1958

Card 2/2

SOROKIN, M.F.; LYALYUSHKO, K.A.

Glyptal-epoxide resins modified with vegetable oils. Trudy MKHTI  
no.29:83-87 '59. (MIRA 13:11)

(Epoxy resins)

SOROKIN, M.F.; LAGUZINA, A.M.

Synthesis and study of resins derived from aryldiglycidyl ethers  
and dicarboxylic acids. Trudy ~~MI~~HTI no.29:88-92 '59.  
(MIRA 13:11)

(Epoxy resins)

SOROKIN, M.F.

Synthesis of resins based on p-tert-butylphenol in the presence of  
surface active agents. Lakoskras.mat.i ikh prim. no.3:2-8 '60.

(MIRA 14:4)

(Resins, Synthetic) (Phenols) (Surface active agents)

5.3610  
AUTHORS:Sorokin, M. F., Lyalyushko, K. A.69674  
S/153/60/003/01/030/058  
B011/B005

TITLE:

Investigation of the Reactions of Aryl-glycide Ethers With  
Aromatic Amines ↑

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya  
tekhnologiya, 1960, Vol 3, Nr 1, pp 115-118 (USSR)

TEXT: The authors studied the reaction between the phenyl-glycide ethers of phenol, of exo(dimethylphenyl)-p-cresol, of p-tert-butyl phenol, and of o-cresol, with the following aromatic amines: aniline, o- and p-toluidine, o- and p-anisidine, and o- and m-phenylenediamine. They found that this reaction proceeds sufficiently fast and at low temperatures in the case of aromatic amines with a dissociation constant  $> 7.5 \cdot 10^{-11}$  (Table 2). With amines having a lower dissociation constant, the reaction is practically impossible under the same conditions. If the reacting substances are in a stoichiometric relation, the reaction is bimolecular and is expressed by an equation of 2nd order. The activation energy and the temperature coefficient of the reaction depend on the nature of the amine. Table 2 shows that the reaction rate is influenced by the substituent in the aromatic ring and by its position with respect to the amino group. Thus, aniline has a higher dissociation constant than o-anisidine but its reaction rate

Card 1/2

Investigation of the Reactions of Aryl-glycide Ethers  
With Aromatic Amines

69674  
S/153/60/003/01/030/058  
B011/B005

constant is lower. The character of the solvent is decisive for the reaction rate: in acetone, toluene, and dioxane, the reaction does not take place even at high concentrations of the reacting substances. Alcohols (methyl-, ethyl-, and butyl alcohol) accelerate the reaction. The values of the velocity constant change on transition from one amine to another. Table 1 shows these constants, the reaction order, the temperature coefficient, and the activation energy. Table 3 shows the interaction of the glycide ethers with aniline. Table 4 contains the 16 prepared reaction products together with data on the substances used, and the characteristics. There are 4 tables and 1 Soviet reference.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im. D. I. Mendeleyeva;  
Kafedra tekhnologii lakov i krasok (Moscow Institute of Chemical  
Technology imeni D. I. Mendeleev; Chair of Technology of Dyes and  
Varnishes)

SUBMITTED: May 15, 1959

Card 2/2

157140

1407

29044  
S/081/61/000/018/025/027  
B101/B147

AUTHORS: Sorokin, M. E., Lyalyushko, K. A., Dudakova, R. A.

TITLE: Synthetic resins from aryl glycide ethers. Communication I.  
Synthesis of resins from aryl diglycide ethers and substituted  
aromatic diamines

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 18, 1961, 541, abstract  
18P174 (Lakokrasochn. materialy i ikh primeneniye, no. 5,  
1960, 1 - 7)

TEXT: New epoxy amine varnish resins (ER) were synthesized on the basis  
of N,N'-dialkyl diamines (N,N'-diethyl, N,N'-dipropyl, N,N'-dibutyl-4,4'-  
diamino-3,3'-dimethyl-diphenyl methane, and N,N'-diethyl-4,4'-diamino  
diphenyl methane) and the diglycide ethers of resorcinol and 2,2'-(p-  
hydroxy phenyl)-propane. ER are soluble in acetone, acetates, ethyl  
cellosolve, as well as in 1 : 1 mixtures of xylene and butanol, and  
acetone and toluene. They may be stored for one year without any change,  
and if they are hardened with hexamethylene diamine at 18 - 23 or 80°C,  
they form hard, elastic, and shockproof films with high resistance to

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S/081/61/000/018/025/027  
B101/B147

water and alkalis. The best properties were obtained at a ratio: diglycide ether : amine = 2 : 1 or 1.5 : 1. The reaction of N-alkyl amines with aryl glycide ethers was studied and found to be bimolecular. Its rate depends on the molecular weight of the substituting alkyl and on the introduction of a methyl group into the ring. Glycide ethers of p-tert-butyl phenol and exo-(dimethyl phenyl)-p-cresol display equal reactivity. [Abstracter's note: Complete translation.]

X

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39838

15.8120

S/081/62/000/011/052/057  
E202/E192

AUTHORS: Sorokin, M.F., Laguzina, A.M., and Korkishko, Zh.T.

TITLE: Synthetic resins derived from arylglycide esters. 2nd  
bulletin. Resin synthesis from diglycide esters and  
polyatomic alcohols of the aliphatic series.

PERIODICAL: Referativnyy zhurnal, Khimiya, no.11, 1962, 619,  
abstract 11 P 259. (Lakokrasochn. materialy i ikh  
primeneniye, no.6, 1960, 1-4).

TEXT: Based on diglycide esters (DE), resorcine (I) and also  
dioxydiphenyl propane (II), ethylene glycol (III) and diethylene  
glycol (IV), soluble varnish epoxy resins (ES) were prepared. The  
synthesis was carried out (in a 3-neck flask with reflux condenser  
and stirrer placed in a thermostat) with molecular ratios of  
alcohols to esters 1:1, 1.5:1 and 2:1, at 50, 60 and 70 °C in the  
presence of 0.6% catalyst (on the basis of the weight of the  
components) - solid NaOH. The latter was dissolved in diol at the  
synthesis temperature of ES, adding the required quantity of  
arylglycide ester heated to the same temperature. The process was  
controlled by the changing of glycide group content in the  
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X

Synthetic resins derived from ...

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E202/E192

(Bulletin no.1, see R.zh. Khim., 18, 1961, 18P174).

[Abstractor's note: Complete translation.]

Card 3/3

X

86678

S/064/60/000/008/006/008  
B020/B060

158110

AUTHORS: Sorokin, M. F., Angarskaya, E. Ya., Shuvalova, A. N.

TITLE: Mechanism of the Formation of Epoxy Resins From Epichloro Hydrin and Dioxy Diphenyl Propane

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 8, pp. 25-34

TEXT: The formation of epoxy resins from dihydric phenol and epichloro hydrin is theoretically possible in two ways: 1) phenyl ether of glycerin monochloro hydrin forms first, which is dehydrochlorinated to the respective diglycide ethers which, by reaction with the hydroxyl groups of the free phenol molecules, give rise to resins, or 2) the diglycide ethers of bivalent phenol are obtained in one stage in the reaction of epichloro hydrin with the sodium phenolate of a bivalent phenol and their further reaction proceeds as above. The former theory seems to be more probable. The reactions of epichloro hydrin, of glycerin dichloro hydrin, and of 1-phenoxy-3-chloropropanol-2 with phenols and with lye were examined. The respective reaction products were identified, the kinetics was studied at 30, 40, 50, and 60°C, and the rate constants were calculated. The

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86678

Mechanism of the Formation of Epoxy Resins  
From Epichloro Hydrin and Dioxy Diphenyl  
Propane

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B020/B060

hydrolysis of chloro hydrins in NaOH solution was studied (Table 1), the reaction products identified being given in Table 2, and the course of hydrolysis in time at 40° being illustrated in Fig. 1. The same data for the reaction of chloro hydrins with sodium phenolate in water are given in Tables 3 and 4. The reaction of chloro hydrin with phenol and NaOH in water (Fig. 2) and with sodium phenolate in water at 40° (Fig. 3) is illustrated graphically. The comparative reactivity of the chloro hydrins concerned for different reactions is illustrated by the data given in Table 5. The rate constant of the reaction of phenyl glycid ether with different phenols shows a linear dependence on the catalyst concentration (Fig. 4). The dependence of the reaction rate constants  $K_1$  and  $K_2$  of phenyl glycid ether with dioxy diphenyl propane on the catalyst (NaOH) concentration at 90° (Figs. 5,6) is linear, but different from the linear dependence in the reaction of phenyl glycid ether with phenols. The rate constants  $K_2$  and  $K_1$  of the reaction of phenyl glycid ether with dioxy diphenyl propane in bulk are given in Table 7. Fig. 7 is a graph depicting the dependence of the rate constant  $K_1$  of the reaction

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Mechanism of the Formation of Epoxy Resins From S/064/60/000/008/006/008  
Epichloro Hydrin and Dioxy Diphenyl Propane B020/B060

of diphenyl ester of glycerin with phenyl glycid ether on the catalyst (NaOH) concentration at 90°. The reactivity of the secondary hydroxyl is considerably lower than that of phenolic hydroxyls (Table 8). The effect of the ratio of the components upon the properties of synthesized resins was investigated using a) dioxy phenyl propane - epichloro hydrin - NaOH = 1:1.1:1.32, and b) dioxy phenyl propane - epichloro hydrin - NaOH = 1:1.5:1.8. Conditions in the synthesis of resins (Table 9) and the main factors of resins synthesized at 90 and 100° (Table 10) are also given. V. Šupler, M. Lidářík, I. Kinol, and V. Ulbrich are mentioned (Refs. 5,6). There are 7 figures, 10 tables, and 11 references; 2 Soviet, 1 US, 3 British, 3 German, and 4 Czech.

Card 3/3

◊ SOROKIN, M.F.; ANGARSKAYA, E.Ya.; SHUVALOVA, A.N.

Chemistry of the formation of epoxide resins from epichlorohydrin  
and dihydroxy diphenylpropane. Khim.prom. no.8:643-652 D '60.

(MIRA 13:12)

(Epoxy resins) (Propane)

ZLOBINA, V.R.; SOROKIN, M.F.; BLAGONRAVOVA, A.A.

Hardening epoxy resins with urea resins. Lakokras. mat. i  
ikh prim. no.6:17-20 '61. (MIRA 15:3)  
(Epoxy resins)

S/081/62/000/022/082/088  
B101/B186

AUTHORS: Sorokin, M. F., Lyalyushko, K. A.

TITLE: Synthetic resins from aryl glycidic esters. Communication 4.  
Synthesis of solid epoxy resins from E-40 (E-40) resin and aniline

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1962, 554, abstract  
22P476 (Lakokrasochnyye materialy i ikh primeneniye, no. 2, 1961, 7 - 10)

TEXT: The synthesis of novel epoxy varnish resins (ER) by condensing commercial E-40 resin with aniline is described. The effects of the ratio of the initial components and of the reaction temperature on the ER properties were studied. It is shown that using E-40 without toluene results in optimum physicomachanical properties and optimum resistance of the films to the action of 5 % NaOH and 5 %  $H_2SO_4$  (no change within 40 days) in the case of an ER having an equivalent ratio of E-40 : aniline = 2 : 1 at 100°C, wherefrom the resulting ER has a m.p. of 81 - 86°C and 10.5 % glycidic

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groups, and that at 150°C, if E-40 with 6 % of toluene is used, the resulting ER has a m.p. of 93 - 96°C and 8.2 % glycidic groups. The films were prepared from 30 % solutions of the ER in ethylcellosolv with hexamethylene diamine as hardener, by drying at 80°C. Communication } see RZhKhim, 1962, 4P308. [Abstracter's note: Complete translation.]

Card 2/2

SOROKIN, M.F.; LYALYUSHKO, K.A.; KHINCHINA, E.L.

Synthetic resins derived from aryl glycidic esters. Report No.3:  
Synthesis of resins derived from aryl diglycidic esters and  
incomplete glycerides of tung-oil fatty acids. Lakokras. mat.  
i ikh. prim. no.4:6-11 '61. (MIRA 16:7)

(Resins, Synthetic) (Tung oil)

BLOKHIN, A.S.; BORODZYUK, G.G.; LESHCHINSKIY, A.A.; OKSMAN, A.K.;  
KOSMINSKIY, O.F.; MANUSHKIN, A.Ye.; MILEVSKIY, Yu.S.;  
DRIATSKIY, N.M.; VASIL'YEV, V.V.; L'VOVICH, A.A.;  
ORLEYEVSKIY, M.S.; MOROZ, I.A.; OKSIAN, A.K.; KNEL', G.S.;  
SOROKIN, M.F.; BUTLITSKIY, I.M.; VASIL'YEV, L.N.[deceased];  
GINTS, Yu.R.; VASIL'YEV, G.K.; LUGOVSKIY, N.Ye.; KIRILLOV,  
Ye.V.; STRUYKINA, N.S.; LEVINOV, K.G.; BLOKHIN, A.S., otv.  
red.; GURIN, A.V., red.; SLUTSKIN, A.A., tekhn. red.

[K-1920-frequency telephone system] Sistema vysokochastotnogo  
telefonirovaniia K-1920; informatsionnyi sbornik. [By] A.S. Blokhin  
i dr. Moskva, Sviaz'izdat, 1962. 319 p. (MIRA 16:4)  
(Telephone)

SOROKIN, M.F.; KOCHNOVA, Z.A.; SHODE, L.G.; MIKHAYLOVA, L.S.

Polymers of glycidol ethers. Lakokras.mat.i ikh.pr.  
no.3:4-12 '62. (MIRA 15:7)  
(Protective coatings)  
(Glycidol)

15.8120

39770

Z/011/62/019/007/002/005

E112/E453

AUTHORS: Sorokin, M.F., Lyalyushko, K.A.

TITLE: Synthetic resins from arylglycidyl ethers.  
Fourth communication. Synthesis of hard epoxies from  
aniline and epoxy-resin E-40

PERIODICAL: Chemie a chemická technologie. Přehled technické a  
hospodářské literatury, v.19, no.7, 1962, 322,  
abstract Ch 62-4393. (Lakokrasoch materialy, v.2, no.2,  
1962, 7-10)

TEXT: New resin coating materials were synthesized from  
commercial, low-molecular-weight resin E-40 and aniline. The  
resins, hardened with hexamethylene diamine, produced surface  
coatings with outstanding physicomachanical properties. They are  
therefore recommended as raw materials for surface coating  
compositions. Polymerized at relatively low temperatures, the  
resins are almost colourless. Technologically, the  
manufacture of the resins is simple and does not require special  
equipment. The most desirable compositions are obtained if the  
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Synthetic resins from ...

Z/011/62/019/007/002/005  
E112/E453

epoxy-resins are reacted with aniline in the proportion 2:1 and 4:1. Surface coatings based on the above aniline-epoxyresins show good resistance to alkalies and acids. 4 diagrams, 2 tables, 3 literature references.

[Abstracter's note: Complete translation.]

Card 2/2

SOROKIN, M.F.; KOCHNOVA, Z.A.

Polymers of glycidic ethers. Report No.4: Obtaining polymers of  
alkyl glycidic ethers in the presence of basic catalysts. Lako-  
kras.mat. i ikh prim. no.4:6-9 '62. (MIRA 16:11)

SOROKIN, M.F.;;SHODE, L.G.; MIKHAYLOVA, L.S.

Polymers of glycidic ethers. Report No.5: Obtaining polymers of  
aryl glycidic ethers in the presence of basic catalysts. Lako-  
kras.mat. i kh.prim. no.4:10-14 '62. (MIRA 16:11)

SOROKIN, M.F.; KHINCHINA, E.L.

Synthesis of copolymers of allyl glycid ether and methyl-  
methacrylate. Lakokras.mat.i ikh prim. no.5:10-17 '62.

(MIRA 16:1)

(Ethers) (Methacrylate) (Polymers)

SOROKIN, M.F.; KOCHNOVA, Z.A.

Polymerization of  $\alpha$ -oxide compounds; review of literature.  
Lakokras.mat.i ikh prim. no.5:89-96 '62. (MIRA 16:1)  
(Oxides) (Polymerization)

KONOVALOV, Petr Gordeyevich; ZHEBROVSKIY, Vatslav Vatslavovich;  
SHNEYDEROVA, Vera Vladimirovna; SOROKIN, M.F., retsenzent;  
LYALYUSHKO, K.A., retsenzent; YAKUBOVICH, S.V., retsenzent;  
ROGOVIN, Z.A., retsenzent; SOKOLOVA, N.A., red.

[Laboratory work on the chemistry of film-forming substances  
and on the technology of coatings and paints] Laboratornyi  
praktikum po khimii plenkoobrazuiushchikh i po tekhnologii  
lakov i krasok. IAroslavl', Rosvuzizdat, 1963. 202 p.  
(MIRA 17:5)

SOROKIN, M.F.; KOCHNOV, I.M.

Copolymers of unsaturated glycidol esters. Copolymerization  
of glycidyl methacrylate with styrene. Plast.massy no.1:7-11  
'63. (MIRA 16:2)  
(Glycidol) (Styrene) (Polymerization)

SOROKIN, M.F.; KHINCHINA, E.L.

Synthesis of copolymers of glycidyl methacrylate with vinyl  
acetate. Lakokras.mat.i ikh prim. no.1:10-15 '63. (MIRA 16:2)  
(Methacrylic acid)  
(Vinyl acetate polymers)

SOROKIN, M.F.; YANGANSKAYA, E.Ya.; LYALYUSHKO, K.A.

Epoxy lacquers without solvents. Report No.1. Lakokras.mat. i ikh.prim.  
no.2:1-6 '63. (MIRA 16:4)

(Lacquers and lacquering)

S/191/63/000/003/002/022  
B101/B186

AUTHORS: Sorokin, M. F., Lyalyushko, K. A., Dudakova, R. A., Vasil'yev, V. S., Shuvalova, A. N.

TITLE: Copolymers of unsaturated glycidol esters. Copolymerization of glycidyl methacrylate with methyl methacrylate in solvents

PERIODICAL: Plasticheskiye massy, no. 3, 1963, 3 - 7

TEXT: The copolymerization of glycidyl methacrylate (GMA) with methyl methacrylate (MMA) was conducted in a solution of toluene, dioxane, or cyclohexanone under an atmosphere of nitrogen with 0.1 mole% benzoyl peroxide as initiator, the purpose of this study being to produce polymers containing epoxy groups. GMA was synthesized from epichlorohydrine and sodium methacrylate. Optimum reaction was reached at 90°C and 30% concentration of components. At higher concentrations, the reaction went too fast and the mass became too viscous, making it very difficult to take samples. Lower concentration decelerated the reaction considerably. Copolymerization did not occur at 60°C and 30% concentration. At 50% it was too slow but could be accelerated by increasing the benzoyl peroxide addition to 1%. The ro-  
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Copolymers of unsaturated ...

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action was slowest in toluene yielding 77-89%; in dioxane and cyclohexanone it was equally slow yielding 83 - 96%. Reduced viscosity in dioxane was 3.55 - 3.79, in toluene 2.48 - 2.64. The ratio GMA : MMA was varied between 1 : 4 and 4 : 1. The resulting copolymers were white, solid substances soluble in acetone, acetates, dioxane, dichloro ethane, and cyclohexanone. The polydispersion of the copolymers was determined by turbidimetric titration. Pure polyglycidyl methacrylate had the lowest polydispersion, whereas pure polymethyl methacrylate had the highest. The values for the copolymers ranged in between, depending on the molar ratio of components and on the amount of initiator added. Fractionate precipitation showed all fractions to contain equal amounts of glycidic groups: approximately 23% at a ratio GMA : MMA = 1 : 1, ~18% at 1 : 2, ~11% at 1 : 4, ~29% at 2 : 1, and ~33% at 4 : 1. The copolymers were somewhat enriched with GMA and their fractional composition differed from that of a mechanical mixture of components. The copolymerization constants were determined by M. Fineman's and S. D. Ross' method (J. Polymer Sci., 5, 259 (1950)):  $r_{GMA} = 0.94$ ;  $r_{MMA} = 0.75$ .

There are 6 figures and 3 tables.

Card 2/2

SOROKIN, M.F.; MIKHAYLOVA, L.S.

Obtaining polymers of glycidol esters in the presence of acid type catalysts. Lakokras. mat. i ikh prim. no.3:6-11 '63. (MIRA 16:9)  
(Glycidol) (Polymerization)